Artificial Chambers for Wood-associated Sesiid Larvae

By Colin Pratt*

After spending much time during the last two years searching in Sussex for Clearwing larvae and rearing them, it occurred to me that the following successful results of experimentation may be of interest to other enthusiasts of these most interesting lepidoptera.

By far the most wide ranging and authoritative account of the general collection and rearing of British Sesiidae was published over 30 years ago in an A.E.S. leaflet (1946) and, as far as I know, this excellent pamphlet has yet to be equalled. The now standard technique of section cutting using a damp sand treatment with larva or pupa *in situ* was therein described and illustrated. A further treatise was published by Fibiger and Kristensen (1974) detailing the Clearwings present in Fennoscandia and Denmark — with especial regard to the biology of the species treated, much of which is relevant to the British Isles.

As the problem of a larva made homeless by human intervention was not mentioned in either publication, and necessity being the mother of invention, I thought of the possibility of using artificial galleries which would yield high success rates with larvae in their final year. The following techniques were evolved to supplement the method of rearing Sesiidae detailed in the above publications, but differ in that the larvae would continue to function, pupate and successfully emerge, from a simple but somewhat artificial environment.

Bark Dwellers

When bark inhabiting larvae are encountered, artificial homes are occasionally necessary either because their natural habitat has been inadvertently broken during the search and subsequent safe extraction, or because of inaccessibility of the complete chamber.

When collecting larvae, representative portions of bark were taken from living tree stumps felled not more than two years previously. The section of bark thought necessary consisted of a vertical strip which included sap containing the lower portion found on or near the tree-roots. Holes were drilled vertically through the dead section well into the moist layer to a depth of approximately 5 cms., but without breaking through; and, to allow room for larval manoeuvrability, a drill diameter of some 4 mm. was used. The larvae were then introduced head first, one each to a hole. All the larvae encountered took readily to their new homes, which were then lightly plugged with cotton wool and gently mist sprayed with water. Their apparent love of moisture was later illustrated by the semi-immersed position of the cocoons in the water-soaked sand.

This simple technique proved extremely successful with species such as *Aegeria culiciformis* L. and *Synanthedon vespi-*

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formis L., despite the former's penchant in nature for wood as a pupation site.

Gall and Twig Inhabitors

Artificial chambers are sometimes needed for this type of larvae due either to accident, when for example seeking immediate species confirmation in the field, or design, if a gallery is urgently required for the cabinet.

Transference to an artificial mine was again a relatively simple matter. After cutting a fresh strong twig of the appropriate wood, it was split for half its length of roughly 25 cms. A cylindrical artificial mine was carved from the pith of the wood laterally, commencing as far down the split twig as was practicable — a groove being cut from both half sections. An adequate chamber length is usually 25 mm., with a diameter commensurate to larval size but again ensuring sufficient space is available for movement. Introduction of a larva to the artificial chamber was made as soon as practicable after cutting, either head up or down. After insertion, the split ends of the twig were brought together, taking care not to pinch the larva within, and held in place by elastic bands or small Terry clips.

The larva will, after a short examination of its new circumstances, vigorously commence to exclude all light with chewed wood and fine webbing. Occasionally, if the twig is sufficiently fresh and held in a suitable environment, the split will heal over sealing the occupant "naturally" inside — species of *Salix* being especially prone.

With regard to *Conopia flaviventris* Staudinger in particular, despite almost two years spent constructing an often complex peripheral mine in nature, this species takes quite happily to the relatively crude man-made tubular gallery.

Tree Trunk Borers

These species, being the most difficult to extract successfully from their natural sites, are perhaps those that require artificial galleries more often than most. Although section cutting is preferable to a purist collector, this is often neither possible nor desirable.

A variation of the preceding techniques was used for these relatively large larvae — yielding favourable results when applied for example to *S. bembeciformis* Hübn. After peeling back a large shaving of bark using a knife, a steeply sloping hole some 10 mm. in diameter was drilled into a limb of appropriate green wood. Before larval introduction, the orifice was sprayed with water to offset any dehydration of the wood due to the heat of drilling. After larval insertion, the bark strip was replaced and held in place by a drawing pin. As usual, a routine of mist spraying was carried out avoiding the formation of mould. A few larvae tended to wander at pupation time but it was thought to be a natural occurrence rather than the result of larval irritation. This was partially confirmed on consulting Buckler (1887) and Fibiger & Kristensen (1974).

In conclusion, the above techniques formed a simple method of successfully rearing Sesiidae larvae, when their original excavations were unavailable.

References

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The Genetics of East African Lepidoptera — XIV

By D. G. Sevastopulo, F.R.E.S.*

Danaus chrysippus (L.) (Danaidae) (3)

In two previous papers (Sevastopulo, 1970, 1976) I have given strong indications that the nomino-typical form is recessive to f. *dorippus* Klug.

A recent brood has confirmed this, without a shadow of doubt.

A nomino-typical female, caught in my garden in June 1977, laid approximately 50 eggs over a period of four days, and died completely spent. All the eggs laid on the first two days hatched, but some of those laid on the third, and all those laid on the fourth day, failed to colour up and were, obviously, infertile.

There were no larval casualties and eventually 40 pupae were obtained. Unfortunately, despite denuding the leaves fed to the larvae of their underside tomentum, five pupae produced Tachinid parasites. All the emergences from the remaining 35 were f. *dorippus,* 18 males and 17 females, a result that could only be obtained from a pairing between a homozygous dominant (*dorippus*) and a recessive (*chrysippus*).

An interesting point is that whilst Kenya Coast *dorippus* usually have both fore- and hind-wings an almost uniform golden-brown, all the present brood had the basal two-thirds of the forewing distinctly darker and redder than the rest.

References

Sevastopulo, D. G., 1970. Genetics of East African Lepidoptera, XII. *Entomologist,* **103**: 70.
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